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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,815	06/15/2001	Thomas N. Jackson	823.0098USU	7917

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EXAMINER	
NGUYEN, TRUNG Q	
ART UNIT	PAPER NUMBER
2829	

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/882,815	Applicant(s) JACKSON, THOMAS N.	
	Examiner Trung Q Nguyen	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment filed on 11/12/02* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lindsay et al. (U.S. 5,495,109).

As to claim 1, Lindsay et al. disclose in Figures 1 and 5 a method for measuring an electrical characteristic on a molecular scale comprising probing a molecular layer 22 of Fig. 1 or 26 of Fig. 5 (see column 5, lines 63-64 and column 6, lines 20-25) using atomic force microscopy (column 1, lines 18-20) having a cantilever 22 of Fig. 5 including a large contact area probe tip 23 of Fig. 5 by controlling the force applied to probe tip (column 5, lines 34-41); detecting (via detector 42 and electrometer 34) in response to probing and electrical characteristic of molecular layer (column 5 line 63 to column 6, line 6).

As to claims 2 and 9, Lindsay et al. disclose the contact area probe tip comprises a large radius sphere affixed to the cantilever (column 7, lines 44-52).

As to claims 3 and 12 , Lindsay et al. disclose the step of probing includes varying the force applied to probe tip 22 or cantilever 22 (column 6, lines 2-6).

As to claims 4 and 13, Lindsay et al. disclose in Figure 3 electrical characteristic is selected from current and voltage (column 2, lines 12-31).

As to claim 5, Lindsay et al. disclose in Figure 5 the step of detecting (via detector 42 and electrometer 34) includes coupling molecular layer (top surface of substrate 26), cantilever 22, and electro meter 34 to each other in a circuit (see Fig. 5).

As to claims 6 and 14, Lindsay et al. disclose the molecular layer is at least one selected from the group consisting of monolayer 26 of Fig. 5 (see column 5, lines 63-64 and column 6, lines 20-25).

As to claim 7, Lindsay et al. disclose molecular layer is assembled by selected from ion beam sputtering (column 5, lines 29-34).

As to claim 8, Lindsay et al. disclose in Figures 1 and 5 a system for measuring an electrical characteristic on a molecular scale comprising probing a molecular layer 22 of Fig. 1 or 26 of Fig. 5 (see column 5, lines 63-64 and column 6, lines 20-25), subject to having electrical characteristic thereof measured (via electrometer 34 of Fig. 5) using an atomic force microscopy (column 1, lines 18-20) having a cantilever 22 of Fig. 5 including a large contact area probe tip 23 of Fig. 5; a meter 34 couple to molecular layer 26 (Fig. 5) and cantilever 22 (see Fig. 5) for detecting (via detector 42 and

electrometer 34) in response to probing and electrical characteristic of molecular layer (column 5 line 63 to column 6, line 6).

As to claim 10, Lindsay et al. disclose in Figure 5 cantilever 22 and large contact area probe tip 23 comprise at least an electrically conductive coating, the cantilever and large contact area probe tip are electrically conductive (column 1, lines 30-35).

As to claim 11, Lindsay et al. disclose molecular layer 26 is probed by controlling the force applied to probe tip (column 5, lines 34-41).

As to claim 15, Lindsay et al. disclose the molecular layer is assembled by Langmuir-Blodgett deposition (column 8, lines 18-25).

Response to Arguments

3. Applicant's arguments with respect to claims 1-15 have been considered. Some of the arguments are moot in view of the new explanations provided in the rejection for applicant's benefit. The other arguments are not persuasive.

4. *The applicants argue that:* Lindsay et al do not disclose a large contact area probe tip.

5. The examiner respectfully disagree to the above argue because: on column 7 lines 40-52, Lindsay et al. disclose tip contacting an area of 10 nm diameter and being ***swept across the surface*** at 20,000 nm/s (a typical speed). *The tip sweeps out an area of 2E5 nm.sup.2 (2.times.10.sup.5 nm.sup.2) each second*. If there is one electro active molecule in each 20 by 20 angstroms of the surface and one electron is transferred, then the corresponding current is about 0.03 pay, which is quite easy to detect with the electrometer of FIG. 8. It is clearly understood that the contact area of the probe tip is extremely large!

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in the Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within two months of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Nguyen whose telephone number is 703-305-4925. The examiner can normally be reached on Monday through Friday, 8:30AM – 5:00PM. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5841. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cuneo Kammie can be reached at (703) 308-1233.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
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